

Gender differences in the use of coping strategies to reduce food insecurity in Colombia

Diferencias de género en el uso de estrategias de afrontamiento para reducir la inseguridad alimentaria en Colombia

Diferenças de gênero no uso de estratégias de combate à insegurança alimentar na Colômbia

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doi: 10.1590/0102-311XEN252121

Abstract

This study explores the gender differences in the use of coping strategies to reduce food insecurity in Colombian urban and rural households. Data was collected from the Colombian National Survey of Nutritional Status (ENSIN 2015), and analyzed using ordinal logistic regression models, logistic models, and simultaneous equation models. Results show that rural households have a higher prevalence of food insecurity than their urban counterparts. After adjusting for household characteristics – e.g., head of household schooling level –, urban households were more likely to present severe and moderate food insecurity, whereas rural households were more likely to experience mild food insecurity. This result was explained by self-consumption and certain coping strategies, such as selling seeds from the next harvest or animals, implemented by rural households. Even though female-headed households present on average higher levels of food insecurity than male-headed ones, because they are more likely to use coping strategies, especially in rural areas, they can reduce and even cancel out this gap. Hence, female heads are more successful in mitigating food insecurity.

Food Insecurity; Coping Strategies; Gender Inequality

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Introduction

In Colombia, as in Latin America, the number of female-headed households has increased ¹: in 2005, 29.2% of Colombian households were headed by women; in 2018, this percentage reached 41% ². Also, the percentage of male spouses increased from 6.7% in 2005 to 19.8% in 2018, according to the last two census ². These data reveal the sociocultural changes regarding the roles of women in different societal spheres ³, and are highly relevant within household food insecurity, since women play a fundamental role in the daily food system ⁴.

Studies show that women distribute food resources among household members and actively seek strategies to reduce household food insecurity, trying to improve nutrition and, consequently, the well-being of their families ^{3,4}. In rural areas, women are seed custodians, protect natural resources, and are involved in sowing, crop maintenance, food gathering, and care of minor species. Besides, both in rural and urban areas, women are traditionally responsible for cleaning, selecting, preserving, storing, preparing and distributing food, supervising its consumption, and promoting the health, education, and care of family members ⁴. Women are therefore producers, providers, caregivers, and administrators of their families' nutritional needs. Despite being crucial to achieving household food security, most women perform these tasks under conditions of disadvantage, inequality, and inequity within their families, communities and social environment ⁴.

Colombia's *National Surveys of Nutritional Status* (ENSIN) showed that food insecurity, defined as a household's financial inability to access food in the quantity and quality needed, increased from 42.7% in 2005 to 54.2% in 2015 ^{5,6}. The Colombian armed conflict contributed to this increase, as killings, forced displacement, illicit crops, and water contamination generated poverty, limited nutrition, and deterioration in the health and nutritional status of individuals, particularly in rural areas ⁷. Moreover, this conflict has also contributed to an increase in the number of female-headed households as women have actively taken on a variety of roles. Researches show that Colombian women defend water sources, sow and harvest food, confront land grabbers, request government aid, and become mediators and peacebuilders ^{8,9}. In times of food crisis and armed conflict, data show that women tend to become "shock absorbers" ^{8,10,11,12}.

To our knowledge, there is no research on how Colombian households have implemented coping strategies to address food insecurity and whether there are gender-based differences in their implementation. Hence, our objectives are twofold: (1) to explore the gender differences in the use of coping strategies to overcome food insecurity among Colombian urban and rural households, and (2) to establish whether female heads are more efficient than their male counterparts in implementing coping strategies.

Methods

Data

This study used the ENSIN 2015 ⁵, a subsample of the Colombian Ministry of Health master sample. The design of the master sample was based on a probabilistic, clustered, stratified and multistage design. The ENSIN 2015 comprises 44,202 households and 151,343 inhabitants distributed across 295 municipalities, of which 44,134 households have information on food insecurity (99.8%). Questions on coping strategies were asked of households with a socioeconomic stratum (national classification of blocks or clusters that indicates utility subsidy) of three or less; this information was collected for 40,016 households, and 39,427 have complete data (98.5%). Since the information loss was lower than 2%, we did not impute the missing data.

Estimation of indicators, logistic models and ordinal logistic models were performed using Stata (<https://www.stata.com>) option `svy` and the sample defined according to the designers' recommendations: `svyset cod_UPM_rev [pweight = FactorExpansion], strata(Estrato_UPM) fpc(fpc_upm) vce(linearized) singleunit(certainty) || USM, strata(EstratoZona) fpc(fpc_USM) || UTM, fpc(fpc_utm)`. For the simultaneous equation models, we considered the expansion factor through the weight option.

Methods

Multivariate analysis was performed using ordinal logistic regression model, logistic model, and simultaneous equation models, with household food insecurity levels and coping strategies as the dependent variables. Household food insecurity levels were estimated using the cut-off points established by the harmonized *Latin American and Caribbean Scale of Food Security Scale* (ELCSA), consisting of 15 questions with a reference period of the past 30 days, which classifies households into mild, moderate, and severe food insecurity. Mild food insecurity occurs when food may not be sufficient to meet household needs. Moderate food insecurity points to a reduction in food variety and the amount normally consumed when financial resources are insufficient. Finally, severe food insecurity indicates a condition of extreme hunger, where one or more family members have stopped eating one of their daily meals or even consuming food for a whole day, starting with adults, followed by children and adolescents¹³.

ENSIN 2015⁵ included eight questions on coping strategies with a reference period of seven days before the survey based on the *Coping Strategies Index* (CSI), which measures early warning and monitoring of food security¹⁴. The reference period and coping strategies have also been validated by Maxwell & Caldwell¹⁴ and Matute¹⁵. For this study, we analyzed the following coping strategies: strategies to adapt to extreme situations (consuming lower quality and/or cheaper foods, borrowing money to buy food or depending on a relative, friend or acquaintance to obtain food, and reducing meal portions so that food can be served to each family member); strategies involving the sale or pledging of assets (selling or pledging family goods or belongings to buy food for household consumption, selling or pledging tools, seeds from the next harvest, animals or work tools, selling breeding animals, consuming seeds from the next harvest, and consuming breeding animals); and strategies related to receiving aid from nearby social network in households with children under 18 years old¹⁶.

Next, we explain the methodologies used to determine the association between household food insecurity and coping strategies, and the correlations of these variables with household characteristics.

- **Probability of being at each household food insecurity level: ordinal logistic regression model**

To analyze the probability of being at each household food insecurity level, we defined a “Standard household type 1” to calculate the predicted probabilities of food insecurity in a household. Consisting of 4 members living at a low socioeconomic status, this hypothetical household was headed by a 50-year-old non-ethnic minority person who was married and had 5 years of education. Age structure was as follows: 25% of the household are adults over 64 years of age, 50% are children under 18, and 25% are adults between the ages of 18–64. No family member is a person with physical disabilities and 50% of the family members is unemployed. The “Standard household type 1” was subdivided into four types based on the following variables: gender of the head of household (male, female) and area of residence (urban and rural).

Regarding regression models, an ordinal logistic model estimated the probability of being at each household food insecurity level for “Standard household type 1”. Equations 1 to 3 show this model in detail:

$$S_{1i} = \log \left(\frac{\pi_{\text{Mild, moderate and severe},i}}{\pi_{\text{Security},i}} \right) = \gamma_{1,00} + \gamma_{1,01}F_i + \sum_{k=1}^K \gamma_{1,k0}X_{ki} + \sum_{k=1}^K \gamma_{1,k1}X_{ki}F_i + \varepsilon_{1i} \quad (1)$$

$$S_{2i} = \log \left(\frac{\pi_{\text{Moderate and severe},i}}{\pi_{\text{Mild and secure},i}} \right) = \gamma_{2,00} + \gamma_{2,01}F_i + \sum_{k=1}^K \gamma_{2,k0}X_{ki} + \sum_{k=1}^K \gamma_{2,k1}X_{ki}F_i + \varepsilon_{2i} \quad (2)$$

$$S_{3i} = \log \left(\frac{\pi_{\text{Severe},i}}{\pi_{\text{Mild, moderate and secure},i}} \right) = \gamma_{3,00} + \gamma_{3,01}F_i + \sum_{k=1}^K \gamma_{3,k0}X_{ki} + \sum_{k=1}^K \gamma_{3,k1}X_{ki}F_i + \varepsilon_{3i} \quad (3)$$

Where:

S_{1i} is 1 if the household i is food insecure, either at a mild, moderate, or severe level, and 0 otherwise.

S_{2i} is 1 if the household i is severely or moderately food insecure, and 0 otherwise.

S_{3i} is 1 if the household i is severely food insecure, and 0 otherwise.

- **Probability of using each type of coping strategies: logistic regression model**

We estimated eight logistic models to establish the relationship between each coping strategy and household characteristics, according to Equation 4. Results were shown in odds ratio (OR).

$$Y_{iA} = \log\left(\frac{\pi_{iA}}{1-\pi_{iA}}\right) = \tau_{A,00} + \tau_{A,01}F_i + \sum_{k=1}^K \tau_{A,k0}X_{ki} + \sum_{k=1}^K \tau_{A,k1}X_{ki}F_i + \varepsilon_i \quad (4)$$

Where Y_i is 1 if the household i uses coping strategies A , or 0 otherwise.

- **Mutual causality between coping strategies and household food insecurity: simultaneous equation models**

Since coping strategies are used to prevent or mitigate household food insecurity levels they present mutual causality or endogeneity, that is, an increase in household food insecurity level increases the number of coping strategies that may be used, and these in turn modify that household food insecurity level when they are implemented. To reduce endogeneity, we estimated simultaneous equations, method that uses instrumental variables, which have to be correlated with the predicted variable but uncorrelated with the response variable. Since the Internet allows family members to search for strategies to reduce food insecurity, Internet access in the household was defined as instrumental variables for the number of coping strategies equations. However, we still lack data about its impact on the number of implemented household food insecurity strategies. Drinking water supply for food preparation was the instrumental variable for the household food insecurity scoring equation. Research shows that limited access to water can involve walking long distances, making multiple trips to water sources, skipping drinking, changing cooking plans, and recycling water ¹⁷.

Equations 5 and 6 illustrate the two simultaneous equations estimated, in which household food insecurity score and number of coping strategy are the dependent variables. Mutual causality was calculated by including the number of coping strategy as the explanatory variable of score and vice versa.

$$N_i = \beta_{00} + \beta_{01}F_i + \beta_{02}P_i + \sum_{k=1}^K \beta_{k0}X_{ki} + \sum_{k=1}^K \beta_{k1}X_{ki}F_i + \varepsilon_i \quad (5)$$

$$P_i = \rho_{00} + \rho_{01}F_i + \rho_{02}N_i + \sum_{k=1}^K \rho_{k0}X_{ki} + \sum_{k=1}^K \rho_{k1}X_{ki}F_i + \varepsilon_i \quad (6)$$

Where N_i is the number of coping strategies and P_i the household food insecurity score. As the ENSIN 2015 survey specifically asked about “receiving help from neighbors or relatives to feed households with children”, both equations were estimated separately for households with and without children under 18.

Besides the “Standard household type 1”, defined to interpret the results for households with children, we also defined a “Standard household type 2” with similar characteristics, but excluding children under 18. Hence, the household also consists of 4 members but with following the age structure: 25% of the household members are adults over 64 years old and 75% are adults between 18-64 years of age.

- **Independent variables**

The independent variables in all models were: F_i the binary variable identifying the gender of the head of household, 1 for women and 0 for men; X_{ki} , each of the control variables; and $X_{ki}F_i$ the interaction between variable X_{ki} and female-headed household to determine the gender differences in both dependent variables. Only interactions statistically significant at 90% were included in the final estimates.

The control variables used are defined as follows:

- a) Years of education: a continuous variable that measures the head of household’s years of education;
- b) Age: a continuous variable that measures the head of household’s age;
- c) Ethnic minority head of household: three binary variables related to the ethnic minority origin of the head of household were defined: (i) indigenous head of household takes the value 1 if the head

- of household identifies themselves as indigenous, 0 otherwise; (ii) Afro-Colombian head of household takes the value 1 if the head of household identifies themselves as Afro-Colombian, 0 otherwise; and (iii) non-ethnic minority head of household takes the value 1 if the head of household does not identify as an ethnic minority group. The last variable used in the models has a reference variable;
- d) Married head of household: a binary variable that takes the value 1 if the head of household reported being married or cohabiting;
- e) Number of household members: a continuous variable that measures the number of household members;
- f) Number of household members under 18: corresponds to the number of household members under 18 divided by the total number of household members;
- g) Number of older adults in the household: corresponds to the number of members older than 64 divided by the total number of household members;
- h) Number of household members not working: is equal to the difference between the number of household members and the number of members older than 11 who work, divided by the total number of household members;
- i) Household socioeconomic status: estimated using the *Demographic and Health Survey* (DHS) Wealth Index methodology based on indicators related to housing (type of materials used to build it and water, sewage, and electricity supply) and asset ownership (bicycle, television, car, etc.). Socioeconomic status levels were measured as wealth index quartiles (very low: 1st quantile, low: 2nd quantile, medium: 3rd quantile, and high: 4th quantile) ¹⁸.

Results

Food insecurity in Colombian households

Of the total sample, 54.2% of households presented household food insecurity, with a 95% confidence interval between 95%CI: 53.0, 55.5; however, we must identify the household food insecurity severity level to understand its scope. According to Table 1 shows, 31.9% (95%CI: 31.0, 32.8) of households showed mild household food insecurity, 13.8% (95%CI: 13.1, 14.5) moderate household food insecurity, and 8.5% (95%CI: 8.0, 9.1) severe food insecurity. Regarding gender, 57.5% (95%CI: 55.8, 59.3) of households headed by women and 52% (95%CI: 50.5, 53.4) of households headed by men had household food insecurity. As for area of residence, the proportion of household food insecurity in a rural area was 1.22 times higher than in urban area (64.1%, 95%CI: 61.3, 66.8 vs. 52.5%, 95%CI: 51.1, 53.9, respectively). We observed a similar situation concerning differentials by area and gender. The proportion of rural households headed by women with household food insecurity was almost 70%, of which 38.1% (95%CI: 34.8, 41.6) presented mild food insecurity, 18.7% (95%CI: 16.1, 21.6) moderate, and 12.2% (95%CI: 10.4, 14.2) severe. For households headed by women in urban areas, the values were 32.2% (95%CI: 30.8, 33.7), 14.4% (95%CI: 13.4, 15.4) and 9.6% (95%CI: 8.8, 10.5), respectively. Whereas households headed by man presented 30.5% (95%CI: 29.3, 31.7), 12% (95%CI: 11.1, 12.9), 7.2% (95%CI: 6.5, 8.0), respectively. These findings suggest statistically significant differences between female-headed households in urban and rural areas for mild and moderate household food insecurity. Comparing female-headed and male-headed households, in urban areas there are differences statistically significant for moderate and severe levels of household food insecurity; in contrast, there are not differences in rural areas.

Table 2 shows the predicted probabilities of food insecurity in a "Standard household type 1". The means and percentiles shown were estimated using bootstrap sampling with 500 replications. We found no statistically difference for the probabilities of having severe or moderate food insecurity by gender in the same area of residence. However, the probability of household food insecurity, regardless of gender, was higher in urban than in rural households. A "Standard household type 1" headed by a man in an urban area showed a 0.14 probability of being severely food insecure, compared to 0.06 in a rural area. On the other hand, this probability was 0.16 and 0.07 for urban and rural female-headed households, respectively. Moderate household food insecurity showed similar results, with a 0.15

Table 1

Mild, moderate, and severe food insecurity percentage of households. Colombia, 2015.

Variables	All households		Area of residence			
	%	95%CI	Urban		Rural	
			%	95%CI	%	95%CI
Total of households						
Secure	45.8	44.5, 47.0	47.5	46.1, 48.9	35.9	33.2, 38.7
Mild	31.9	31.0, 32.8	31.2	30.3, 32.2	35.5	33.2, 37.8
Moderate	13.8	13.1, 14.5	13.0	12.3, 13.7	18.5	16.5, 20.8
Severe	8.5	8.0, 9.1	8.2	7.6, 8.9	10.0	8.9, 11.2
Total	100.0		100.0		100.0	
Observations (n)	44,135		32,982		11,153	
Female-headed households						
Secure	42.4	40.7, 44.2	43.7	41.8, 45.6	31.0	28.1, 34.0
Mild	32.8	31.5, 34.2	32.2	30.8, 33.7	38.1	34.8, 41.6
Moderate	14.8	13.9, 15.8	14.4	13.4, 15.4	18.7	16.1, 21.6
Severe	9.9	9.1, 10.7	9.6	8.8, 10.5	12.2	10.4, 14.2
Total	100.0		100.0		100.0	
Observations (n)	16,637		13,747		2,890	
Male-headed households						
Secure	48.0	46.6, 49.5	50.3	48.8, 51.9	37.8	34.8, 40.8
Mild	31.2	30.2, 32.3	30.5	29.3, 31.7	34.5	32.3, 36.8
Moderate	13.2	12.3, 14.0	12.0	11.1, 12.9	18.5	16.2, 21.0
Severe	7.6	7.0, 8.2	7.2	6.5, 8.0	9.2	8.0, 10.6
Total	100.0		100.0		100.0	
Observations (n)	27,498		19,235		8,263	

95%CI: 95% confidence interval.

Source: *Colombian National Survey of Nutritional Status (ENSIN)*, 2015.

chance of food insecurity in rural male-headed households and 0.21 in urban ones; and a 0.17 chance for female-headed rural households and 0.25 for urban households.

After controlling for years of education and household socioeconomic status, living in a rural area was not associated with the probability of having severe or moderate household food insecurity. In other words, rural households had a higher prevalence of household food insecurity than those living in urban areas not because they lived in rural areas, but because of their socioeconomic conditions.

Conversely, rural households had a higher probability of experiencing mild food insecurity: 0.40 for male-headed households and 0.46 for female-headed households. As for urban households, the probability of being mildly food insecure was lower, at around 0.36. Regarding the low socioeconomic status of the "Standard household type 1", the probabilities of having moderate or severe household food insecurity were more significant in urban than in rural areas.

Strategies implemented by Colombian households to cope with food insecurity

Regarding coping strategies, we found urban households used between 1 and 2 strategies on average, 0.96 for households without children and 1.28 for households with children. In rural areas, these figures were 1.2 and 1.4, respectively. Table 3 shows the prevalence in the use of each coping strategies by area and gender. As for the type of coping strategy, the most commonly used strategies by households were consuming lower quality and/or cheaper food (60.6%), borrowing money to buy food (47.3%) and reducing meal portions so that all family members could eat (46.8%). Results show that more than half of the households consumed lower quality food.

Table 2

Predicted probabilities of having different levels of household food insecurity in a "Standard household type 1".
Colombia, 2015.

Households	Food insecurity levels			
	Secure	Mild	Moderate	Severe
Urban area				
Male-headed household				
Mean	0.279	0.368	0.215	0.138
P01, P99	0.249, 0.307	0.335, 0.398	0.186, 0.243	0.115, 0.166
P05, P95	0.256, 0.300	0.345, 0.39	0.195, 0.236	0.123, 0.156
P10, P90	0.262, 0.296	0.350, 0.385	0.199, 0.232	0.125, 0.152
Female-headed household				
Mean	0.235	0.354	0.251	0.160
P01, P99	0.203, 0.279	0.314, 0.394	0.215, 0.284	0.132, 0.194
P05, P95	0.211, 0.261	0.325, 0.383	0.224, 0.277	0.139, 0.182
P10, P90	0.216, 0.254	0.332, 0.375	0.230, 0.273	0.142, 0.177
Rural area				
Male-headed household				
Mean	0.391	0.403	0.151	0.055
P01, P99	0.357, 0.425	0.372, 0.434	0.133, 0.173	0.047, 0.066
P05, P95	0.366, 0.415	0.379, 0.424	0.138, 0.16	0.048, 0.064
P10, P90	0.373, 0.411	0.385, 0.42	0.140, 0.162	0.050, 0.061
Female-headed household				
Mean	0.310	0.456	0.166	0.068
P01, P99	0.264, 0.363	0.411, 0.496	0.134, 0.195	0.051, 0.087
P05, P95	0.277, 0.347	0.424, 0.488	0.143, 0.187	0.056, 0.082
P10, P90	0.283, 0.338	0.429, 0.481	0.148, 0.182	0.059, 0.078

Note: a "Standard household type 1" was defined as follows: 4 members who live in low socioeconomic status. This household is headed by someone from a non-ethnic minority, who was 50 years old, married and had five years of education. The household's age structure is the following: 25% of the household members are adults over 64 years of age, 50% are children under 18 years of age, and 25% of the household members are adults aged between 18-64 years of age. In addition, no member has a physical limitation and 50% of household's members do not work. P01, P99, P05, P95, P10 and P90 are the 1, 99, 5, 95, 10 and 90 percentiles, respectively. The percentiles are estimated using bootstrap sampling with 500 replications.

For households with children, 24% received help from neighbors or relatives to provide food to their children. Although more common in urban than rural households (25.2% vs. 18.5%), in urban areas 29.8% of female-headed households and 21.4% of male-headed used this strategy.

Table 4 summarizes the results of the logistic models, which associate household characteristics with the strategies used to cope with food insecurity. Female-headed households were more likely to implement any coping strategy than male-headed households (OR, between 1.2 and 2.1), except for selling or pledging seeds from the next harvest, animals or work tools and consuming seeds from the next harvest or breeding animals. We found no statistically significant differences by gender and area of residence for these two coping strategies.

Results showed that years of education and being an indigenous household head were associated with borrowing money among both men and women; however, the age of the household head mitigated this difference. Age was also inversely associated with the difference between the probabilities of selling or pledging goods or household belongings for men and women. On the other hand, the difference between female- and male-headed households concerning the probability of reducing meal portions was inversely associated with the number of family members and directly correlated with the number of household members older than 64 years and younger than 18.

Table 3

Food coping strategies implemented by residence area and sex of household head.

Coping strategies implemented by households	All		Urban area			Rural area				
	%	Observations (n)	Female-headed household (%)	Male-headed household (%)	Total (%)	Observations (n)	Female-headed household (%)	Male-headed household (%)	Total (%)	Observations (n)
Adaptive strategies for coping with adverse situations										
Consuming lower quality and/or cheaper food	60.6	14,894	64.1	59.3	61.5	11,174	58.4	55.4	56.3	3,720
Borrowing money to buy food or depending on a relative, friend, or acquaintance to buy food	47.3	11,716	51.6	45.2	48.1	8,875	44.8	42.9	43.5	2,841
Reduce meal portions	46.8	11,904	49.5	43.9	46.5	8,699	47.8	48.2	48.1	3,205
Strategies for the sale of liquid assets or productive assets										
Selling or pawning some goods or belongings of the family	8.4	2,166	9.2	8.1	8.6	1,666	7.5	7.6	7.6	500
Selling or pawning tools, seeds from the next harvest, animals, or work tools	0.7	301	0.2	0.2	0.2	70	2.4	3.9	3.5	231
Selling animals for buying food	2.5	961	0.8	0.8	0.8	225	10.1	11.5	11.1	736
Using the seeds of the next harvest or breeding animal	1.9	791	0.5	0.8	0.7	208	6.7	8.5	8.0	583
Households with children under 18 were helped by neighbours or relative to feed the children	24.0	3,669	29.8	21.4	25.2	2,777	24.3	16.1	18.5	892
Observations (all)	24.0	3,669	100.0	100.0	100.0	18,350	100.0	100.0	100.0	6,114

%: proportion of households.

Source: *Colombian National Survey of Nutritional Status (ENSIN)*, 2015.

Regarding the coping strategy consuming seeds from the next harvest or breeding animals, we found a statistically significant difference only for indigenous households: women used this strategy less frequently than men. Finally, the number of household members was inversely associated with the probability of using help of neighbors or relatives to feed their children by female and male household heads.

Years of education, household socioeconomic status, and the number of household members older than 64 years were inversely associated with the use of any coping strategies. Conversely, identifying oneself an ethnic minority, the number of senior and young family members, the number of household members not working, and the number of household members were positively related to the

Table 4

Households' characteristics associated with coping strategies. Colombia, 2015.

Variables	Adaptive strategies for coping with adverse situations			Strategies for the sale of liquid assets or productive assets				
	Consuming lower quality and/or cheaper food	Borrowing money to buy food or depending on a relative, friend, or acquaintance to buy food	Reducing meal portions	Selling or pawning some goods or belongings of the family	Selling or pawning tools, seeds from the next harvest, animals, or work items	Selling animals for buying food	Consumption of the seeds of the next harvest or breeding animal	Households with children under 18 were helped by neighbors or relatives to feed the children
	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)
Household head characteristics								
Resides in a rural area [reference: urban area]	0.531 * (0.029)	0.478 * (0.032)	0.537 * (0.037)	0.495 * (0.072)	7.092 * (2.013)	4.235 * (0.581)	3.012 * (0.513)	0.383 * (0.034)
Female head	1.267 * (0.056)	1.356 ** (0.233)	1.436 * (0.129)	1.813 * (0.320)	1,001 (0.472)	1.355 *** (0.166)	0.993 (0.156)	2.033 * (0.329)
Years of education	0.927 * (0.004)	0.929 * (0.005)	0.919 * (0.004)	0.946 * (0.008)	0.932 *** (0.030)	0.901 * (0.018)	0.917 * (0.017)	0.948 * (0.007)
Age	0.996 *** (0.002)	0.992 * (0.002)	0.996 *** (0.002)	0,997 (0.004)	1.004 (0.007)	1.021 * (0.006)	1.011 ** (0.006)	0.987 * (0.003)
Household head from ethnic minority background [reference: non-ethnic minority head of the household]								
Indigenous head of household	1.684 * (0.221)	1.331 *** (0.190)	1.761 * (0.237)	1.700 *** (0.379)	2.611 * (0.868)	3.050 * (0.686)	4.190 * (1.383)	1.564 * (0.233)
Afro-Colombian head of household	1.488 * (0.084)	1.548 * (0.096)	1.739 * (0.109)	1.907 * (0.185)	2.509 * (0.660)	0.972 (0.171)	1.311 (0.225)	1.729 * (0.143)
Married household head	0.950 (0.044)	0.807 * (0.039)	0.863 * (0.042)	0.834 *** (0.075)	0,681 (0.223)	1.846 * (0.298)	1,304 (0.239)	0.826 *** (0.070)
Household characteristics								
Household socioeconomic status [reference: very low socioeconomic status (quantile 1 of wealth index)]								
Low	0.753 * (0.039)	0.712 * (0.038)	0.629 * (0.037)	0.584 * (0.049)	0.244 * (0.092)	0.402 * (0.092)	0.294 * (0.077)	0.667 * (0.053)
Medium	0.548 * (0.031)	0.414 * (0.026)	0.428 * (0.026)	0.393 * (0.043)	0.057 * (0.034)	0.103 * (0.037)	0.034 * (0.019)	0.373 * (0.037)
High	0.434 * (0.034)	0.268 * (0.022)	0.262 * (0.021)	0.212 * (0.034)	0.092 * (0.070)	0.038 * (0.018)	0.020 * (0.011)	0.293 * (0.042)

(continues)

Table 4 (continued)

Variables	Adaptive strategies for coping with adverse situations				Strategies for the sale of liquid assets or productive assets			
	Consuming lower quality and/or cheaper food	Borrowing money to buy food or depending on a relative, friend, or acquaintance to buy food	Reducing meal portions	Selling or pawning some goods or belongings of the family	Selling or pawning tools, seeds from the next harvest, animals, or work items	Selling animals for buying food	Consumption of the seeds of the next harvest or breeding animal	Households with children under 18 were helped by neighbors or relatives to feed the children
	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)	OR (SE)
Number of household members	1.052 * (0.013)	1.016 (0.013)	1.126 * (0.019)	1.068 * (0.022)	1.129 *** (0.053)	0.961 (0.039)	1.046 (0.048)	1.038 (0.025)
Proportion of older adults in the household	0.692 * (0.062)	0.838 ** (0.076)	0.795 *** (0.085)	0.596 *** (0.116)	1.104 (0.366)	0.568 *** (0.179)	0.622 (0.183)	1.032 (0.380)
Proportion of household members younger than 18	0.835 (0.091)	1,15 (0.133)	0.465 * (0.069)	0,838 (0.175)	0.637 (0.256)	2.015 ** (0.770)	0.977 (0.396)	1.365 (0.293)
Proportion of household members who do not work	1.752 * (0.117)	2.013 * (0.150)	2.016 * (0.151)	1.950 * (0.272)	1,663 (0.631)	1,014 (0.309)	0,955 (0.321)	5.745 * (0.985)
Significant interactions with female head								
Years of education x female-headed household		1.019 *** (0.009)						
Age x female-headed household		0.995 ** (0.003)		0.989 * (0.003)				
Indigenous-headed household x female-headed household		1.417 *** (0.246)					0.584 ** (0.172)	
Number of household members x female-headed household			0.944 *** (0.022)					0.927 *** (0.029)
Proportion of household members younger than 18 x female-headed household			1.719 * (0.343)					
Proportion of older adults in the household x female-headed household			0.617 * (0.080)					0.255 * (0.118)
Constant	1.458 * (0.156)	1.312 *** (0.163)	0,911 (0.111)	0.109 * (0.024)	0.003 * (0.002)	0.006 * (0.003)	0.012 * (0.005)	0.194 * (0.044)
Observations	39.427	39.427	39.427	39.427	39.427	39.427	39.427	23.397

OR: odds ratio; SE: standard error.

* p < 0.01;

** p < 0.1;

*** p < 0.05.

probability of using coping strategies. Lastly, rural households were more likely to sell or pawn seeds from the next harvest, work tools and animals and consume seeds from the next harvest or breeding animals than urban households (OR between 3.0 and 7.1). As for the other coping strategies, urban households were more likely to use them (OR between 0.3 and 0.55) than rural households.

Relationship between food insecurity and coping strategies

Table 5 presents the estimates of the simultaneous equation models, which aim to explain the household food insecurity score and the number of coping strategies used by households considering the endogeneity caused by their mutual relationship. Endogeneity between these two variables was confirmed by the Durbin-Wu-Hausman test. In the first estimation stage and after performing the F-test, the instrumental variables were statistically significant at 99%. Results were disaggregated for households without children (Table 5, columns 1 and 2) and households with children (Table 5, columns 3 and 4).

Analyzing only the model results for childless households (Table 5, column 1), derivation of the household food insecurity score P_i regarding female-headed households is given by the Equation 7:

$$\frac{\partial N}{\partial F} = 2.410 - 0.919N - 0.056 \text{ number of household members} - 0.218 \text{ rural} - 0.062 \text{ head's education} - 0.011 \text{ head's age} - 0.307 \text{ low status} - 0.653 \text{ medium status} - 0.737 \text{ high status} \quad (7)$$

In urban areas, the female-headed household score was 2.410 points higher than the male-headed household score, whereas in rural areas this score was 2.192 higher (2.410 - 0.218) when other household characteristics did not vary. For the "Standard household type 2", which excludes minors, these values were 1.33 (2.41 - 0.056 x 4 - 0.062 x 5 - 0.011 x 50) for urban households and 1.11 (2.41 - 0.056 x 4 - 0.218 - 0.062 x 5 - 0.011 x 50) for rural households. In turn, the number of coping strategies implemented by female-headed households (N_i) was inversely correlated with the household food insecurity score (-0.919). Therefore, using one coping strategies could virtually cancel the positive coefficient of female-headed households in both urban and rural areas for "Standard household type 2", while using two coping strategies could reverse the sign. Similarly, years of education, age of the head of household, household socioeconomic status, and the number of household members were also inversely associated with the difference between female- and male-headed household scores.

According to Table 5, column 2, derivation of the number of coping strategies implemented regarding childless female-headed household is given by the Equation 8:

$$\frac{\partial N}{\partial F} = 0.730 - 0.247P + 0.051 \text{ number of household members} + 0.230 \text{ proportion of non-workers} - 0.353 \text{ rural} - 0.014 \text{ head's education} + 0.305 \text{ Afro} + 0.319 \text{ indigenous} - 0.262 \text{ low status} - 0.380 \text{ medium status} - 0.556 \text{ high status} \quad (8)$$

The coefficient for female-headed households was positive, 0.730 for urban households and 0.377 for rural households (0.730 - 0.353). For the "Standard household type 2", coefficients were 0.630 (0.73 + 0.051 x 4 + 0.23 x 0.5 - 0.353 - 0.014 x 5) and 0.980 (0.73 + 0.051 x 4 + 0.23 x 0.5 - 0.014 x 5) for rural and urban households, respectively, suggesting that female-headed households may use more coping strategies than male-headed households. However, an increase in p-score was associated with a decrease in $\frac{\partial N}{\partial F}$, which could reduce the difference between the number of coping strategies used by female- and male-headed households. On average, therefore, a female-headed household with mild household food insecurity may use more strategies than a male-headed household; when moderate and severe household food insecurity levels are reached, however, both may use the same number of coping strategies.

Regarding household characteristics, the number of household members, the number of household members not working, and the head of household self-identifying as Afro-Colombian or Indigenous were directly correlated with the difference between the number of strategies used by female- and male-headed households; on the other hand, years of education and household socioeconomic status were inversely correlated.

Table 5

Factors associated with the number of coping strategies and food insecurity scores. Simultaneous equation model. Colombia, 2015.

Variables	Households without children		Households with children	
	Food insecurity score (column 1) Coefficient (SE)	Number of coping strategies (column 2) Coefficient (SE)	Food insecurity score (column 3) Coefficient (SE)	Number of coping strategies (column 4) Coefficient (SE)
Variables of interest				
Number of coping strategies	2.757 *		3.842 *	
	(0.021)		(0.026)	
Number of coping strategies x female-headed household	-0.919 *		-1.281 *	
	(0.027)		(0.033)	
Food Insecurity Score		0.731 *		0.558 *
		(0.006)		(0.004)
Food insecurity score x female-headed household		-0.247 *		-0.212 *
		(0.007)		(0.005)
Instrumental variables (first stage)				
The household has Internet access		0.102 *		0.091 *
		(0.016)		(0.016)
Continuous water supply	0.078 **		0.103 **	
	(0.033)		(0.045)	
Household head characteristics				
Resides in a rural area [reference: urban area]	-0.155 **	0.499 *	0.287 *	0.433 *
	(0.071)	(0.037)	(0.100)	(0.038)
Female head	2.410 *	0.730 *	1.211 *	0.917 *
	(0.171)	(0.067)	(0.272)	(0.111)
Years of education	0.054 *	0.012 *	0.049 *	0.030 *
	(0.005)	(0.003)	(0.008)	(0.003)
Age	0,002	0.003 *	0.007 *	
	(0.002)	(0.001)	(0.002)	
Household head from an ethnic minority background [reference: non-ethnic minority head of the household]				
Afro-Colombian-headed household	-0.344 *	-0,079	-1.070 *	-0.161 **
	(0.122)	(0.071)	(0.187)	(0.070)
Indigenous-headed household	0,053	-0.298 *	-0.463 *	-0.192 *
	(0.063)	(0.037)	(0.110)	(0.041)
Married household head	-0.161 *	0.100 *	-0.098	0.030
	(0.044)	(0.023)	(0.074)	(0.028)
Household characteristics				
Household socioeconomic status [reference: very low socioeconomic status (quantile 1 of wealth index)]				
Low	0,031	0.345 *	0.119	0.321 *
	(0.069)	(0.035)	(0.096)	(0.036)
Medium	0.133 ***	0.537 *	0.467 *	0.477 *
	(0.074)	(0.039)	(0.103)	(0.039)
High	0.165 **	0.683 *	0.423 *	0.633 *
	(0.082)	(0.043)	(0.115)	(0.044)
Number of household members	0.053 **	-0.049 *	0.051 **	-0.103 *
	(0.024)	(0.012)	(0.022)	(0.008)

(continues)

Table 5 (continued)

Variables	Households without children		Households with children	
	Food insecurity score	Number of coping strategies	Food insecurity score	Number of coping strategies
	(column 1)	(column 2)	(column 3)	(column 4)
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Proportion of older adults in the household	0.165 * (0.063)	-0.034 (0.032)	0.199 (0.257)	-0.038 (0.093)
Proportion of household members younger than 18			0.704 * (0.191)	-0.235 * (0.071)
Proportion of household members who do not work	-0.130 * (0.049)	-0.160 * (0.029)	-2.187 * (0.175)	-0.037 (0.065)
Significant interactions with female heads				
Number of household members x female-headed household	-0.056 *** (0.032)	0.051 * (0.016)	0.080 * (0.031)	0.059 * (0.012)
Proportion of persons in the household that do not work x female-headed household		0.230 * (0.033)	1.710 * (0.249)	0.331 * (0.093)
Resides in the rural area x female-headed household	-0.218 *** (0.121)	-0.353 * (0.063)	-0.680 * (0.170)	-0.365 * (0.064)
Years of education x female-headed households	-0.062 *** (0.008)	-0.014 *** (0.004)	-0.044 *** (0.011)	-0.040 * (0.005)
Age x female-headed households	-0.011 * (0.002)			-0.004 * (0.001)
Afro-Colombian head of household x female-headed household		0.305 * (0.046)	0.850 * (0.165)	0.128 ** (0.062)
Indigenous-headed household x female-headed household		0.319 * (0.093)	1.054 * (0.304)	0.235 ** (0.114)
Low household socioeconomic status x female-headed household	-0.307 * (0.109)	-0.262 * (0.056)	-0.587 * (0.145)	-0.225 * (0.055)
Medium household socioeconomic status x female-headed household	-0.653 * (0.112)	-0.380 * (0.059)	-1.241 * (0.156)	-0.345 * (0.059)
High household socioeconomic status x female-headed household	-0.737 * (0.122)	-0.556 * (0.063)	-1.485 * (0.175)	-0.452 * (0.067)
Constant	-1.400 * (0.123)	-1.004 * (0.059)	-1.723 * (0.211)	-0.521 * (0.071)
Observations	16.030	16.030	23.397	23.397
R-squared	0,291	0,265	0,28	0,232

SE: standard error.

* p < 0.01;

** p < 0.05;

*** p < 0.1.

Table 5 (columns 3 and 4) presents the results for households. Derivation of the household food insecurity score regarding female-headed households is given by the Equation 9:

$$\frac{\partial P}{\partial F} = 1.211 - 1.281N + 0.080 \text{ number of household members} + 1.710 \text{ proportion of non-workers} - 0.680 \text{ rural} - 0.044 \text{ head's education} + 0.850 \text{ Afro} + 1.054 \text{ indigenous} - 0.587 \text{ low status} - 1.241 \text{ medium status} - 1.485 \text{ high status} \quad (9)$$

Female-headed households had a higher household food insecurity score than male-headed households, as the coefficient was 1.211 for urban households and 0.531 (1.211 - 0.680) for rural households. For the "Standard household type 1", the coefficient was 2.170 (1.211 + 0.08 x 4 + 1.71 x 0.5 - 0.044 x 5) for urban households and 1.490 (1.211 + 0.08 x 4 + 1.71 x 0.5 - 0.68 - 0.044 x 5) for rural ones. However, a high number of strategies could cancel and even reverse this difference between female- and male-headed households. For example, if an urban female-headed household used one strategy, this almost nullified the difference (2.170 - 1.280 = 0.89), and if it used two strategies, the difference was reversed (2.170 - 2 x 1.280 = -0.40). Similarly, household socioeconomic status was directly associated with the difference in household food insecurity score between female- and male-headed households - the better the status, the smaller the difference. We observed a similar association for years of education. Conversely, household heads with ethnic background, the number of household members and the number of family members not working were directly associated with household food insecurity scores for female-headed households, widening the score gap compared to male-headed households.

The Equation 10 corresponds to the derivation of the number of coping strategies relative to female-headed households with children (Table 5, column 4):

$$\frac{\partial N}{\partial F} = 0.917 - 0.212P + 0.059 \text{ number of household members} + 0.331 \text{ proportion of non-workers} - 0.365 \text{ rural} - 0.040 \text{ head's education} - 0.004 \text{ head's age} + 0.128 \text{ Afro} + 0.235 \text{ indigenous} - 0.225 \text{ low status} - 0.345 \text{ medium status} - 0.452 \text{ high status} \quad (10)$$

According to this equation, urban female-headed households used 0.917 more coping strategies on average than urban male-headed households. For rural female-headed households, this use was 0.552 higher (0.917 - 0.365) when the other variables did not vary. As with childless households, the difference in the number of coping strategies used between female- and male-headed households was inversely associated with the household food insecurity score. Thus, for mild household food insecurity, female-headed households use more coping strategies on average than male-headed households, but as household food insecurity levels increase to moderate or severe, for example, both types of households use coping strategies. Other factors correlated with a small difference between the number of coping strategies used in female- and male-head households were having a higher household socioeconomic status and being an older, more educated household head. On the other hand, female heads of household with an ethnic background, the number of household members not working, and the number of household members widened the gap in favor of female-headed households.

Finally, the Equations 11 and 12 give the derivations of the household food insecurity score regarding rural households (Table 5):

$$\frac{\partial P}{\partial \text{Rural}} = -0.155 - 0.218 \text{ female head for childless households} \quad (11)$$

$$\frac{\partial P}{\partial \text{Rural}} = 0.287 - 0.680 \text{ female head for households with children} \quad (12)$$

Living in rural areas was inversely correlated with household food insecurity scores for both female- and male-headed households for a childless household. However, this relationship was even more negative for the first type of household (-0.155 - 0.218 = -0.373). On the other hand, the derivation for households with children shows that living in rural areas was associated with an increase in the household food insecurity score for male-headed households, but with a decrease for female-headed households (0.287 - 0.680 = -0.393). This findings may suggest that rural female-headed households were more effective in mitigating household food insecurity than rural male-headed households.

Discussion

Results show that although the prevalence of household food insecurity is higher in rural than in urban areas (64.1% vs. 52.5%), living in rural areas was associated with a lower probability of experiencing severe or moderate food insecurity than living in urban household. One reason for this is that unlike urban households, rural households traditionally carry out actions that reduce the probability of food shortages, such as producing for self-consumption, as evidenced by ENSIN 2015⁵. Self-consumption together with some coping strategies, such as selling or pledging work tools, seeds from the next harvest, and breeding animals and consuming seeds from the next harvest or breeding animals, decrease the probability of household food insecurity. Other studies have also observed that strengthening self-consumption capacities and peasant, family and community farming helps reduce the risk of food and nutritional insecurity^{19,20,21}.

Therefore, what makes rural households more vulnerable to household food insecurity than urban households may be their poor living conditions. In Colombia, area inequalities stem from the provision of public, educational, and health services⁴. The *National Health and Nutrition Survey of Mexico*²² reported similar results, showing that Mexican households with children under 18 years of age are more vulnerable to food insecurity due to economic or social deprivation²³.

Other results show that living in rural areas decreases household food insecurity scores for both female- and male-headed households; however, this decrease is greater for female-headed households, indicating that female heads are more successful at mitigating household food insecurity. These findings are in line with other studies, suggesting that women, despite different social, economic, and cultural barriers that place them at a disadvantage⁴, are often more effective and efficient in improving food security in their households^{24,25}. In times of food crisis, low access to food, agricultural production instability, and armed conflict, women usually become “impact shock absorbers” to protect their households’ food security^{8,26,27,28}.

Our results also indicated that female-headed households had a greater probability of experiencing household food insecurity than male-headed households; however, the use of coping strategies by female heads of household might cancel or even reverse this result. As women use more coping strategies than men, the gap in household food insecurity level decreases between both types of households. Similarly, Salcedo & Guzman¹⁶ showed that female-headed households are more likely to use coping strategies. Research shows that women’s ability to solve household issues positively influences food security and nutrition^{24,29}, suggesting that women’s empowerment promotes equity and minimizes hunger and malnutrition rates, improving household welfare. Female-headed households use more coping strategies than male-headed households, however, the gap in the number of coping strategies is reduced as the household food insecurity level increases. Hence, in scenarios of mild household food insecurity, female-headed households use more coping strategies than male-headed households; but in contexts of moderate or severe household food insecurity, both use the same number of coping strategies.

We also found that the coping strategies most commonly used by households, regardless of gender, area of residence, and household food insecurity level, were “consuming lower quality and/or cheaper food, borrowing money to buy food, and reducing meal portions so that all family members could eat”. Moreover, differences in the probability of using a particular strategy varied according to household characteristics. For example, borrowing money was more frequent among female-headed households than among male-headed households. This difference was also associated with high levels of education and older household heads. To our knowledge, this is the first study to analyze coping strategies types.

Finally, results showed that households headed by indigenous individuals consume production supplies such as seeds or breeding animals, which might be explained by cultural and territorial ties to food sovereignty and autonomy, contributing to the right to food, self-determination, and defense of their cultural heritage⁸.

One important limitation of this study concerns food insecurity analysis: restricted to access measured by the harmonized ELCSA, it does not include other dimensions of food safety, such as food availability and consumption³⁰, which could also be associated with the dynamics of female-headed households, particularly in Colombia. However, this study associates household food insecurity and

coping strategies at the country level, allowing policymakers to better understand the strategies used by households to overcome food insecurity. Another limitation was data availability. We controlled for the main factors associated with food insecurity and use of coping strategies that our information restriction allowed. But the methods used and statistical tests performed reduced the effect of omitted variables and allowed us to derive robust results.

Conclusions

This paper explored the differences in coping strategies used by gender of the household head to overcome food insecurity and to establish whether female heads are more efficient than their male counterparts in implementing coping strategies. The analysis was also performed by area of residence, comparing urban and rural households.

Although rural households have a higher prevalence of food insecurity than urban households, after controlling for household characteristics, urban households were more likely to experience severe and moderate food insecurity, whereas rural households were more probable to experience mild food insecurity. This result was explained by self-consumption and certain coping strategies implemented by rural households, such as selling seeds from the next harvest or breeding animals.

Therefore, female heads are more successful in mitigating household food insecurity, using more coping strategies than their male counterparts. After controlling for coping strategies and socioeconomic status, female-headed households remained less likely to experience food insecurity than male-headed households. We observed this result clearly for rural women, who combine protective actions such as self-consumption of food and redistribution of food portions, among others.

Despite women's ability to resolve specific food insecurity situations, they are unable to overcome it, as this depends on social, economic and cultural factors, among others. This study will allow decision-makers to formulate public policies aimed at women, increasing institutional supply for female-headed households and contributing to reduce inequities and food insecurity levels in Colombia.

Contributors

L. M. Sanchez-Céspedes contributed in the formulation of research question, study design, database preparation and statistical analysis, analysis of results, discussion, conclusions and writing the text. E. L. Suárez-Higuera, L. J. Rosas-Vargas and S. E. Del Castillo-Matamoros contributed in the formulation of research question, literature review, study design, and analysis of results. V. E. Soto-Rojas contributed in the formulation of research question, study design, statistical analysis and description of results.

Additional informations

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Acknowledgments

Colombian Institute of Family Welfare and National University of Colombia (agreement 1445 of 2018).

Conflict of interest

The authors declare no conflict of interest.

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Resumen

El objetivo del estudio fue explorar las diferencias en el uso de estrategias de afrontamiento para superar la inseguridad alimentaria en los hogares colombianos entre los hogares encabezados por mujeres y los encabezados por hombres, tanto en zonas urbanas como rurales. Este estudio utilizó la Encuesta Nacional de Situación Nutricional (ENSIN 2015). Para lograr nuestro objetivo, estimamos tres tipos de modelos: modelos de regresión logística ordinal, modelos logísticos y modelos de ecuaciones simultáneas. Encontramos que los hogares rurales tienen una mayor prevalencia de inseguridad alimentaria que los urbanos; sin embargo, después de controlar por las características del hogar, por ejemplo, el nivel educativo de su jefe, los hogares urbanos tienen más probabilidades de presentar inseguridad alimentaria severa y moderada, mientras que los hogares rurales tienen más probabilidades de experimentar inseguridad alimentaria leve. Este resultado se explica por el autoconsumo y algunas estrategias de afrontamiento, como la venta de semillas de la próxima cosecha o de animales, que los hogares rurales pueden poner en práctica. Hemos observado que los hogares encabezados por mujeres son más propensos a utilizar estrategias de afrontamiento que los hogares encabezados por hombres. En consecuencia, aunque los hogares encabezados por mujeres tienen en promedio niveles más altos de inseguridad alimentaria que los encabezados por hombres, el uso de estrategias de afrontamiento por parte de las mujeres cabeza de familia, especialmente en las zonas rurales, reduce e incluso puede anular esta diferencia. Por lo tanto, concluimos que las mujeres cabeza de familia tienen más éxito a la hora de mitigar la inseguridad alimentaria.

Inseguridad Alimentaria; Estrategias de Enfrentamiento; Inequidad de Género

Resumo

Este estudo explora as diferenças no uso de estratégias de combate para superar a insegurança alimentar em domicílios urbanos e rurais da Colômbia, cujas famílias são chefiadas por mulheres e homens. Este estudo utilizou a Pesquisa Nacional da Situação Nutricional da Colômbia (ENSIN 2015). Três tipos de modelos foram estimados: regressão logística ordinal, logística e equação simultânea. Domicílios rurais apresentam maior prevalência de insegurança alimentar do que os urbanos. No entanto, após controlar as características – por exemplo, a escolaridade dos chefes de família –, os domicílios urbanos são mais propensos a sofrer insegurança alimentar severa e moderada, ao passo que os domicílios rurais são mais propensos a insegurança alimentar leve. Esse resultado foi explicado pelo consumo de produção própria e algumas estratégias de enfrentamento, como a venda de sementes da próxima safra ou animais, que podem ser implementadas por famílias rurais. Descobrimos que as famílias chefiadas por mulheres são mais propensas a usar estratégias de enfrentamento do que as famílias chefiadas por homens. Como resultado, embora as famílias chefiadas por mulheres tenham, em média, níveis de insegurança alimentar mais elevados do que as chefiadas por homens, o uso de estratégias de enfrentamento por mulheres, especialmente nas áreas rurais, reduz e pode até cancelar essa lacuna. Concluimos, então, que chefes mulheres são mais bem sucedidas em mitigar a insegurança alimentar.

Insegurança Alimentar; Estratégias de Enfrentamento; Iniquidade de Género

Submitted on 31/Oct/2021

Final version resubmitted on 22/Jun/2022

Approved on 08/Jul/2022